US-PAT-NO: 5993699

DOCUMENT-IDENTIFIER: US 5993699 A

TITLE: Aluminum nitride based composite body electronic functional material, electrostatic chuck and method of producing aluminum nitride based composite body

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Detailed Description Text - DETX (10):

In general, the cathode luminescence is a radiation emitted from a sample when the sample is irradiated by an electron ray. As diagrammatically shown in FIG. 1, if an electron is excited from a valence band to a conduction band, a hole is formed in the valence band. Then, a radiation having a wavelength corresponding to a bad gap between the conduction band and the valence band is produced when the excited electron transits from the conduction band to the valence band and is recombined with the hole in the valence band. In addition, if a local electron level other than the conduction band is generated by actions of defects and impurities included in the crystal, a radiation is produced when an excited electron transits from the local electron level to the valence band and is recombined with the hole. Therefore, it is possible to obtain information about an energy band structure, a crystallizability and defects and impurities included in the crystal from the cathode luminescence spectrum.

	U	L	Document ID	Issue Date	Pages	Tit
39	☐	☐	US 5993699 A	19991130	15	Aluminum nitride based composit material, electrostatic chuck a
40	☐	☐	US 5973335 A	19991026	14	Semiconductor memory devices wi
41	☐	☐	US 5970316 A	19991019	12	Method of making active pixel s leakage current
42	☐	☐	US 5958340 A	19990928	9	Solid-state chemical sensor
43	☐	☐	US 5943552 A	19990824	30	Schottky metal detection method

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United States Patent [19]

Katsuda et al.

[11] Patent Number: 5,993,699

[45] Date of Patent: Nov. 30, 1999

[54] ALUMINUM NITRIDE BASED COMPOSITE BODY ELECTRONIC FUNCTIONAL MATERIAL, ELECTROSTATIC CHUCK AND METHOD OF PRODUCING ALUMINUM NITRIDE BASED COMPOSITE BODY

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[52] U.S. Cl. 252/521.5; 252/518.1; 252/521.1; 501/98.1; 501/98.4

[58] Field of Search 252/521.5, 300, 252/518.1, 521.1; 501/96–98

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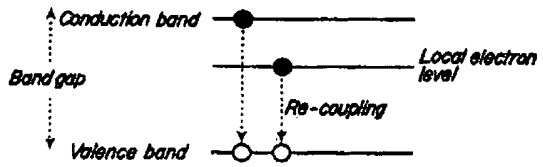
[57] ABSTRACT

This invention provides an aluminum nitride based composite body comprising aluminum nitride crystal grains and γ-alumina type crystals in which the aluminum nitride crystal grains has a specified oxygen content as measured by means of an X-ray microanalyzer and a specified spin amount per unit mg of aluminum obtained from a spectrum measured by an electron spin resonance method as well as a method of producing the same.

12 Claims, 6 Drawing Sheets